No. 876,489. PATENTED JAN. 14, 1908.

S. B. RAPPLEYE & J. J. DEVINE.

ELECTRIC RAILWAY SYSTEM.

APPLICATION FILED NOV. 23, 1906.

2 SHEETS—SHEET 1.

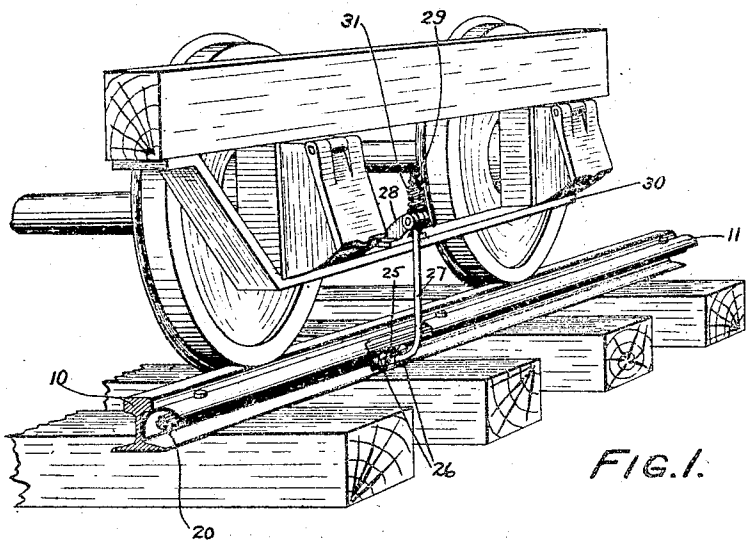


FIG. 1.

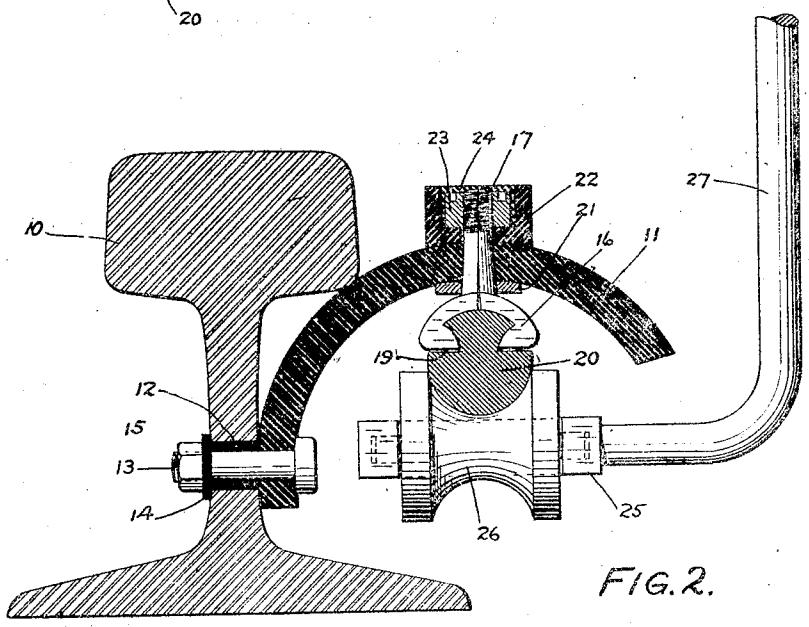


FIG. 2.

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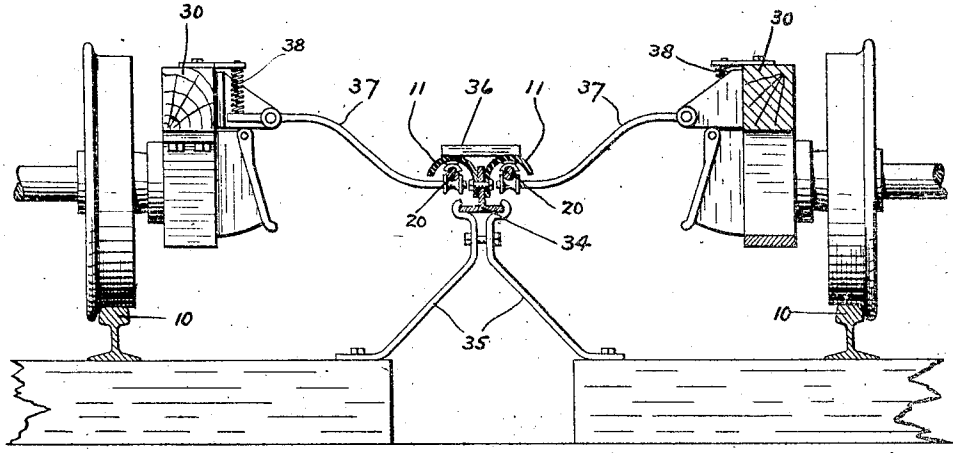
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2 SHEETS—SHEET 2.

FIG. 3.



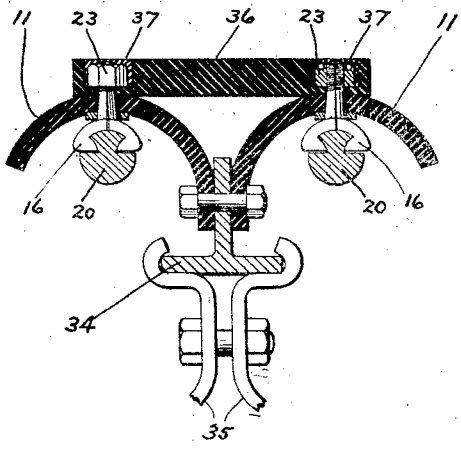


FIG. 4.

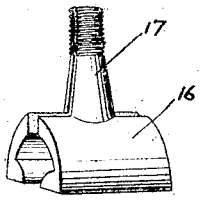


FIG. 5.

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ELECTRIC-RAILWAY SYSTEM.

No. 876,489. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed November 22, 1906. Serial No. 344,546.

To all whom it may concern:

Be it known that we, SAMUEL B. RAPPLEYE and JOHN J. DEVINE, citizens of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Electric-Railway Systems, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that type of electric railway in which a third rail or other continuous current transmitter or conductor is employed.

The object of the invention is to provide a new mode of support for the conductor that will insure perfect insulation, safety from accidental contact, protection from rain, snow, ice, and dirt, and economy in installation.

In the drawings: Figure 1 is a perspective view of one of the track rails, the conductor, the suspension device for the latter, a part of a car-truck and a contact device suspended therefrom and engaging the conductor; Fig. 2 is a transverse section of one of the track rails, the conductor, the devices for suspending and securing the conductor, and a part of the contact device; Fig. 3 is a transverse sectional view of a modified construction; Fig. 4 is a detail sectional view of the suspension device of the modification; Fig. 5 is a detail perspective view of one of the hangers.

10 is one of the main track rails.

11 is a strip of non-conducting material, preferably that known commercially as "fiber". These strips are secured to the track-rails and abutted end to end to form, like the track rails, a continuous structure designed to both support and protect the conductor.

The web of the track-rail is provided, at suitable intervals, with bolt holes into each of which is inserted a bushing 12 of non-conducting material forming a bolt-receiving orifice corresponding to a bolt-receiving orifice in the strip 11. Through this orifice extends a bolt 13 provided with a washer 14 of non-conducting material and a nut 15. The strip 11 is secured to the outer face of the web of the track-rail and is preferably of curved-shape in cross-section, the strip curving, as shown, upwardly and at its outer edge somewhat downwardly. The upwardly-curved part of the strip contacts with the lower outer edge of the head of the track-rail, thus enabling the track-rail itself to resist the upward strain upon the conductor to which the latter is subjected.

At the highest part of the strip the latter is provided with bolt-receiving orifices to receive the hanger that directly supports the conductor. This hanger consists of the clamp 16 and bolt 17, the hanger being split through the longitudinal centers of the clamp and bolt into two parts or halves. The upper part of the bolt 17, when the two halves of the latter are brought together, is circular in cross-section and screw threaded, while the lower part of the bolt is tapered, the end of greater diameter adjoining the clamp 16. The bolt-receiving orifice in the strip 11 is also tapered, the walls of the orifice converging from bottom to top.

The clamp 16 is of approximate semi-cylindrical shape in cross-section and is provided, at its lower side edge, with inwardly extending flanges 18 each having a flat bottom and a convex inner face. The conductor 20 is of approximately circular cross-section except that it is provided with two oppositely located grooves 19 having flat bottoms and concave sides; the grooves 19 corresponding in size and shape with the flanges 18 of the clamp.

On the bolt 17, between the bracket 16 and strip 11, is a washer 21. Surrounding the bolt 17, and above the strip 11, is an open-topped box-shaped washer 22 of non-conducting material, within which is a nut 23 engaging the threaded upper end of the bolt and passing down upon the washer 22.

To suspend the conductor 20 from the strip 11, the two parts or halves of the hanger 16—17 are engaged with the orifices 19 in the conductor 20 and brought together and the bolt 17 carrying the washer 21 inserted from beneath through the orifice in the strip 11. The washer 22 and nut 23 are then applied and the latter is tightened up until the bolt is securely wedged in the strip orifice. After the conductor is thus secured in position, non-conducting material 24 is poured into the box-shaped washer 22 until the top of the bolt 17 is covered, thus enabling the top of the strip 11 to be handled without possibility of receiving current from the conductor, holding the nut from rotation, and preventing any attack by moisture

against the connection between the hanger and strip.

The contact device is composed of a frame 25, a pair of trolley wheels 26 journaled therein, and a supporting rod 27 suspended from the truck in any suitable known way. In the drawings, the rod is shown as extending through an orifice in a lug 28 on the truck 30 and is pressed upwardly by means of a spring 31 coiled about the rod and confined between said lug and a nut 29 on the top of the rod.

The foregoing construction is well adapted for use on elevated railways, but for surface roads it is ordinarily desirable to elevate the conductor some distance from the ground. A modification adapted for surface roads and also for a double track on which cars run in opposite directions is shown in Figs. 2, 3 and 4. For this purpose an inverted T-bar 34 is supported between and at some distance above the two tracks and the strips 11 are secured to both sides thereof by means of a bolt 32 and nut 33. The conductors are suspended from the strips 11 by means the same as those hereinbefore described, except that, in place of the washers or boxes 22, is substituted a cross bar 36, composed of non-conducting material and provided, like the washers or boxes 22, with recesses 37, 37, to receive first the nut 23 and then the non-conducting material 24. The cross-bar 36 serves also as a reinforcing strip or brace to take the upward thrust of the trolley. The contact device is the same as that hereinbefore described so far as the frame and wheels are concerned; but a horizontally extending lever 37, pivoted on the truck and pressed by the spring 38, may be substituted for the spring-pressed rod 29.

The T-bar 34 is supported from pairs of standards 35 secured at intervals to the ties of the two tracks. The T-bars are abutted end to end to form a continuous bar.

Having now fully described my invention what I claim and desire to protect by Letters Patent is:

1. In an electric railway system, the combination with a strip of non-conducting material, of means to support the same at approximately one end thereof, said strip being bent or curved so as to extend upwardly from its point of support and thence downwardly and terminating above the level of its point of support, the conductor, and a hanger supporting the conductor and extending through the strip, and means securing the hanger to the strip.

2. In an electric railway system, the combination with a strip of non-conducting material bent or curved to form a concavity beneath it to receive the conductor, of means to support said strip, a recessed device above the strip, the conductor, a hanger supporting the conductor, and extending above the strip into said recess, and non-conducting material in said recess and covering the top of the hanger.

3. In an electric railway system, the combination with a strip of non-conducting material bent or curved to form a concavity beneath it to receive the conductor, of means to support said strip, a recessed device above the strip, a hanger supporting the conductor and extending above the strip into said recess, a nut in said recess engaging the hanger, and non-conducting material in said recess covering the nut and hanger-top.

4. In an electric railway system, the combination with a strip of non-conducting material bent or curved to form a concavity beneath it to receive the conductor, of means to support said strip, the conductor, a hanger composed of a two part clamp provided with opposing inwardly extending flanges engaging grooves in the conductor, a recessed device above the strip, a bolt connected to the hanger and extending through the strip into said recess, a nut on the bolt, and non-conducting material in said recess covering said nut and bolt.

5. In an electric railway system, the combination with a strip of non-conducting material bent or curved to form a concavity beneath it to receive the conductor, of means to support said strip, the conductor, a hanger composed of a two part clamp provided with opposing inwardly extending flanges engaging grooves in the conductor, a recessed device above the strip, a two part bolt, connected to the clamps respectively, and tapered upwardly and extending through a similarly tapered orifice in the strip, a nut in said recess engaging the bolt, and non-conducting material in said recess covering said nut and bolt.

6. In an electric railway system, the combination with strips abutted end to end, of orificed supporting means therefor, bushings inserted in said orifices, bolts extending through said bushings and strips, a conductor, said strips being bent or curved to form a concavity beneath it to receive the conductor, hangers supporting the conductor and extending through said strips, and devices above said strip securing the hangers and strip and including non-conducting means surrounding and overlying the parts of the hangers projecting above said strip.

7. In an electric railway system, the combination with a supporting strip and means to which the strip is secured and from which the strip extends outwardly, of the conductor beneath the strip, a hanger supporting the conductor and divided longitudinally into two parts both of which extend through the strip, and means above the strip to clamp the abutting ends of the hanger parts together and secure them to the strip.

8. In an electric railway system, the com-

bination with a supporting strip and means to which the strip is secured and from which the strip extends outwardly, of the conductor beneath the strip, a hanger divided longitudinally into two parts whose lower diverging ends embrace and engage the conductor and whose upper ends extend above the strip and are threaded to form a two-part screw, and means above the strip engaging the screw-threaded end of the hanger and by means of which the two parts of the hanger are clamped together and secured to the strip.

9. In an electric railway system, the combination with a supporting strip and means to which the strip is secured and from which the strip extends outwardly, of the conductor beneath the strip, a hanger divided longitudinally into two parts whose diverging lower ends engage the conductor and whose shanks above said lower ends are tapered upwardly and rest within a tapered recess in the strip and whose upper ends, projecting above the strip, are screw threaded, and means above the strip engaging the screw threaded ends of the hanger and by means of which the hanger is drawn upwardly and the lower ends thereof drawn toward each other.

10. In an electric railway system, the combination with one of the track rails, of a strip of insulating material secured to the web of the rail and bent or curved upwardly to contact with the rail head and thence outwardly substantially beyond or outside the rail head, a conductor beneath the part of the strip extending beyond the rail head, and a hanger engaging the last named part of the strip and supporting the conductor.

In testimony of which invention, we have hereunto set our hands, at Philadelphia, on this 12th day of November, 1906.

SAMUEL B. RAPPLEYE.
JOHN J. DEVINE.

Witnesses:
FRANK S. BUSSER,
M. M. HAMILTON.